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M. Salomon and G. T. Hefter	1533	Mobilities of cation–macrocyclic ligand complexes
N. N. Daeid, S. T. Atkinson and K. B. Nolan	1541	Synthetic porphyrins/metalloporphyrins which mimic states in catalytic cycle of cytochrome P-450 and peroxidases
R. Perrin, R. Lamartine and M. Perrin	1549	The potential industrial applications of calixarenes

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Macromolecular Nomenclature (W. V. Metanomski, R. E. Bareiss, J. Kahovec, K. L. Loening, L. Shi and V. P. Shibaev)	1561	Nomenclature of regular double-strand (ladder and spiro) organic polymers (IUPAC Recommendations 1993)
Commission on Polymer Characterization and Properties (J. C. Seferis, D. R. Moore and H. G. Zachmann)	1581	Intrinsic characterization of continuous fibre reinforced thermoplastic composites–III. A collaborative study of the structure and morphology in continuous fibre reinforced PET[poly(ethylene terephalate)] and PEEK [poly(ether-ether-ketone)] (Technical Report)
Commission on Water Chemistry (M. Waldman and Y. Shevah)	1595	Biodegradation and leaching of pollutants: Monitoring aspects (Technical Report)

AUGUST

Plenary and Invited lectures presented at the International Symposium on Experimental and Theoretical Aspects of Excited State Electron Transfer and Related Phenomena held in Pultusk, Poland, 27 September-2 October 1992

S. Paszyc	iv	Foreword
N. Mataga	1605	Photoinduced electron transfer and multiple states mechanisms
J. H. van der Waals and J. van Tol	1611	Spin transfer versus charge transfer in the excited states of $3d^0$ tetroxo ions
E. Szajdzińska-Piętek, J. L. Gębicki and J. Kroh	1617	Scavenging of hydrated electrons by hydrophobic solutes in ionic micellar solutions
U. Kensy, K-H. Grellmann and M. M. González	1625	Competition between tunnel- and viscosity-effects on bimolecular hydrogen-transfer reaction
M. Itoh	1629	Fluorescence studies of the excited-state proton transfer in substituted 3-hydroxy-chromones in supersonic jet
H. Shizuka	1635	Intramolecular charge transfer emission from excited phenyldisilanes without TICT*
M. Kasha, A. Sytnik and B. Dellinger	1641	Solvent cage spectroscopy
G. Köhler and K. Rechthaler	1647	Solvent effects on excited state relaxation phenomena
M. G. Kuzmin	1653	Exciplex mechanism of the fluorescence quenching in polar media
E. C. Lim	1659	Photoassociation in the lowest triplet state of aromatic molecules: Triplet excimers and exciplexes
M. Van der Auweraer, F. C. De Schryver, G. Verbeek, A. Vaes, N. Helsen, P. Van Haver, S. Depaemalaere, D. Terrell and S. De Meutter	1665	Photo-induced electron transfer in poly-chromophoric systems
K. Yoshihara, A. Yartsev, Y. Nagasawa, H. Kandori, A. Douhal and K. Kemnitz	1671	Femtosecond intermolecular electron transfer between dyes and electron-donating solvents
A. E. Johnson, K. Tominaga, G. C. Walker, W. Jarzeba and P. F. Barbara	1677	Femtosecond electron transfer: Experiment and theory
U. Rempel, B. von Maltzan and C. von Borczyskowski	1681	Temperature and solvent dependent charge transfer in self-organized porphyrin-quinone compounds
D. J. S. Birch, K. Suhling, A. S. Holmes, T. Salthammer and R. E. Imhof	1687	Metal ion quenching of perylene fluorescence in lipid bilayers

* TICT = Twisted Intramolecular Charge Transfer

B. O. Roos, L. Serrano-Andrés and M. Merchán	1693	Multiconfigurational second order perturbation theory applied to the calculation of electronic spectra of conjugated systems
W. Rettig, W. Majenz, R. Herter, J-F. Létard and R. Lapouyade	1699	Photophysics of stilbenoid dye systems: A comparison of experiment and theory
J-F. Létard, R. Lapouyade and W. Rettig	1705	Synthesis and photophysical study of 4-(N-monoaza-15-crown-5) stilbenes forming TICT* states and their complexation with cations
M. A. Fox and Ya-Ping Sun	1713	Experimental probes of excited state character in supercritical fluids
J. W. Verhoeven, T. Scherer and R. J. Willemse	1717	Solvent effects on the structure of fluorescent 'exciplexes' in rigidly-, flexibly-, and non-bridged donor-acceptor systems
J. M. Warman, S. A. Jonker, W. Schuddeboom, M. P. de Haas, M. N. Paddon-Row, J. W. Verhoeven and K. A. Zachariasse	1723	Straight, bent and twisted intramolecular charge separated states as seen by time-resolved microwave conductivity (TRMC)
W. Baumann and Z. Nagy	1729	Photoinduced charge transfer as revealed by ground and excited state dipole moments
R. Wortmann, R. Schmittgen and N. Detzer	1733	Photoinduced charge separation and broken symmetry in Franck-Condon excited *states of tetraphenylpentatetraenes
N. Ghoneim and P. Suppan	1739	Solvation of TICT* states in solvent mixtures
K. A. Zachariasse, T. von der Haar, A. Hebecker, U. Leinhos and W. Kühnle	1745	Intramolecular charge transfer in amino-benzonitriles: Requirements for dual fluorescence
Z. R. Grabowski	1751	Electron transfer in flexible molecules and molecular ions

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

IUPAC-IUPAP Transfermium Working Group (R. C. Barber, N. N. Greenwood, A. Z. Hrynkiewicz, Y. P. Jeannin, M. Lefort, M. Sakai, I. Ulehla, A. P. Wapstra and D. H. Wilkinson)	1757	Discovery of the transfermium elements Part II: Introduction to discovery profiles. Part III: Discovery profiles of the transfermium elements (Note: For Part I see *Pure Appl. Chem.*, Vol. 63, No. 6, pp. 879–886, 1991)
A. Ghiorso & G. T. Seaborg; Yu. Ts. Organessian & I. Zvara; and P. Armbruster, F. P. Hessberger, S. Hofmann, M. Leino, G. Münzenberg, W. Reisdorf & K.-H. Schmidt	1815	Responses on 'Discovery of the transfermium elements' by Lawrence Berkeley Laboratory, California; Joint Institute for Nuclear Research, Dubna; and Gesellschaft für Schwerion enforschung, Darmstadt followed by reply to responses by the Transfermium Working Group
Commission on Polymer Characterization and Properties (T. Ohmae, S. Hosoda, H. Tanaka, H. Kihara, B. Jiang, Q. Ying, R. Qian, T. Masuda and A. Nakajima)	1825	Molecular characteristics and crystalline structure of ethylene-dimethyl-amino-methacrylate copolymers (Technical Report)

Commissions on Electroanalytical Chemistry and Equilibrium Data ((R. P. Buck and V. V. Coşofreţ)	1849	Recommended procedures for calibration of ion-selective electrodes (Technical Report)
Commission on Atmospheric Chemistry (R. H. Brown)	1859	The use of diffusive samplers for monitoring of ambient air (Technical Report)

SEPTEMBER

Plenary and Invited lectures presented at the International Symposium on Calorimetry and Thermodynamics of Biological Processes held in Göteborg-Gullmarsstrand, Sweden, 15–19 May 1992

L. Gustafsson, R. Kemp and E. Gnaiger	iv	Preface
R. B. Kemp	1875	An historical review of developments in cellular microcalorimetry
E. H. Battley	1881	The thermodynamics of growth of *Escherichia coli* K-12 on succinic acid
J. J. Heijnen	1887	In search of a thermodynamic description of biomass yields for chemotrophic growth of microorganisms
U. von Stockar, Ch. Larsson and I. W. Marison	1889	Calorimetry and energetic efficiencies in aerobic and anaerobic microbial growth
L. Gustafsson, R. Ölz, K. Larsson, C. Larsson and L. Adler	1893	Energy balance calculations as a tool to determine maintenance energy requirements under stress conditions
H. V. Westerhoff	1899	Nonequilibrium thermodynamic considerations of the efficiency, control, and regulation of microbial growth
G. R. Welch	1907	Bioenergetics and the cellular microenvironment
B. Zentgraf	1915	Calorimetric studies for optimization of high-performance reactors
C. L. Davey, G. H. Markx and D. B. Kell	1921	On the dielectric method of monitoring cellular viability
G. Lidén	1927	*In situ* fluorescence measurements—clarifying or blurring the picture?
C. Larsson, G. Lidén, A. Blomberg, C. Niklasson and L. Gustafsson	1933	Monitoring and control of batch and fed-batch cultures of *Saccharomyces cerevisiae* by calorimetry
K. P. Murphy and E. Freire	1939	Structural energetics of protein stability and folding cooperativity
H. H. Klump	1947	Correlation between genome size, observed codon preference, and Gibbs energy of codon–anticodon interaction

S. C. Hand	1951	Energetics of anoxia exposure and recovery as assessed by calorimetry and biochemical measurements
M. N. Berry, A. R. Grivell and J. W. Phillips	1957	Hypothesis: The electrochemical regulation of metabolism
D. Clark, M. Brinkman, J. Phillips, T. Grivell and M. Berry	1963	Hepatocyte thermogenesis revisited
K. Drong and I. Lamprecht	1967	Toxicological studies of energy flows in ecological systems
M. Yamamura, N. El Borai, T. Ohkubo, Y. Ishihara, J. Takano, N. Matsunami, K. Kinoshita, T. Miyake, I. Ohtani, Y. Yamazaki and M. Yamamoto	1973	Illustrations of the value of calorimetry in biology
M. Monti, J. Ikomi-Kumm, L. Ljunggren, U. Lund and H. Thysell	1979	Medical application of microcalorimetry in human toxicology. A study of blood compatibility of hemodialysis membranes
E. Gnaiger	1983	Nonequilibrium thermodynamics of energy transformations

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Toxicology (J. Duffus)	2003	Glossary for chemists of terms used in toxicology (IUPAC Recommendations 1993)
Interdivisional Working Party for Harmonization of Quality Assurance Schemes for Analytical Laboratories (M. Thompson and R. Wood)	2123	The international harmonized protocol for the proficiency testing of (chemical) analytical laboratories (Technical Report)

OCTOBER

Invited lectures presented at the 2nd International Symposium on Surface Chemistry, Adsorption and Chromatography held in Moscow, Russia: 29 June–3 July 1992

O. G. Larionov, L. M. Kolomiets and L. D. Belyakova	iv	Preface
G. I. Berezin	2145	Entropy and state of molecules on gas–liquid and gas–solid interface
A. V. Vernov	2151	The peculiarities of phase transitions in adsorbed layers
Y. Grillet, P. L. Llewellyn, M. B. Kenny, F. Rouquerol and J. Rouquerol	2157	Evaluation of the n-nonane preadsorption method with a well characterized model adsorbent: Silicalite-I
J. D. F. Ramsay	2169	Applications of neutron scattering in investigations of adsorption processes in porous materials

A. Lavanchy, P. Rebstein and F. Stoeckli	2175	Variable pressure adsorption and desorption by active carbon beds under PSA* conditions: A comparison of models with experimental data
K. Nakai, J. Sonoda, S. Kondo and I. Abe	2181	The analysis of surface and pores of activated carbons by the adsorption of various gases
N. S. Polyakov, M. M. Dubinin, L. I. Kataeva and G. A. Petuhova	2189	Porous structure and adsorption properties of active carbon
H. Stach, K. Fiedler and J. Jänchen	2193	Correlation between initial heats of adsorption and structural parameters of molecular sieves with different chemical composition—a calorimetric study
L. I. Dernovaya, A. E. Chalych and Yu. A. Eltekov	2201	Adsorption properties of surface iron oxide modified with stearic acid and octadecylamine
O. O. Parenago, O. E. Lebedeva, I. I. Ivanova and E. V. Lunina	2205	Acidity of the external surface of modified pentasil catalysts and its resistance to mechanical treatment
D. K. Efremov and V. B. Fenelonov	2209	Authenticity of pore size distributions obtained by traditional techniques
N. A. Eltekova, G. I. Razd'yakonova and Yu. A. Eltekov	2217	Fractals in geometry of carbon black
F. Ehrburger-Dolle, M. Holz and J. Lahaye	2223	Use of N_2, Ar and CO_2 adsorption for the determination of microporosity and surface fractal dimension of carbon blacks and silicas
T. I. Titova, L. S. Kosheleva, S. P. Zhdanov and M. A. Shubaeva	2231	IR spectroscopic study of structure—chemical aspects of the Na–Y zeolite dealumination with ethylene diamine tetraacetic acid
O. G. Larionov, L. D. Belyakova, N. I. Vinogradova, L. M. Vorobjeva, V. V. Petrenko and N. P. Platonova	2237	Chromatographic methods in solid surface investigations
N. A. Katsanos	2245	Studies of diffusion and other rate processes by gas chromatography
W. Engewald, R. Reinhardt and E. Steinborn	2253	The use of shape-selective stationary phases in GC. Part 1: Cyclodextrin phases
Yu. I. Tarasevich, S. V. Bondarenko, A. I. Zhukova, A. V. Nazarenko and E. V. Aksenenko	2257	Chromatographic and molecular statistical studies of structural and energy characteristics of surface micropores of silicates and silica adsorbents
V. E. Klyushnichenko and A. N. Wulfson	2265	Recombinant human insulin—II. Size-exclusion HPLC of biotechnological precursors. Factors influencing on retention and selectivity
Y. P. Belov	2273	Chiral mobile phases in the enantiomeric analysis and in the evaluation of stability constants of π–π complexes

*PSA = Pressure swing adsorption

S. N. Lanin and Y. S. Nikitin 2281 The model of retention in HPLC with binary mobile phase

G. V. Samsonov, O. A. Pisarev and A. T. Melenevsky 2287 Chromatographic purification and super-purification of biologically active compounds using heteroreticular and composite ion exchange resins at low pressure

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Analytical Nomenclature (G. Svehla) 2291 Nomenclature of kinetic methods of analysis (IUPAC Recommendations 1993)

Commission on Agrochemicals (N. Kurihara, G. D. Paulson, S. Otto, J. Miyamoto and R. M. Hollingworth) 2299 Pesticides report 30: Use of isolated cells to study the metabolism of agrochemicals in animals (Technical Report)

NOVEMBER

Plenary lectures presented at the 18th International Symposium on Macrocyclic Chemistry held in Enschede, Netherlands: 27 June–2 July 1993

C. Andreu, R. Beerli, N. Branda, M. Conn, J. de Mendoza, A. Galán, I. Huc, Y. Kato, M. Tymoschenko, C. Valdez, E. Wintner, R. Wyler and J. Rebek, Jr. 2313 Replication and assembly

Y. Murakami, O. Hayashida, K. Ono and Y. Hisaeda 2319 Thermodynamical and geometrical characterization of molecular recognition by cage-type and peptide azapara-cyclophanes in aqueous media

G. Brodesser, R. Güther, R. Hoss, S. Meier, S. Ottens-Hildebrandt, J. Schmitz and F. Vögtle 2325 New tailored hosts: From molecular recognition to mechanical bonds

H-J. Schneider, T. Blatter, A. Eliseev, V. Rüdiger and O. A. Raevsky 2329 Electrostatics in molecular recognition: From ion pairs and inophores to nucleotides and DNA

S. Fox, A. Nanthakumar, N. Wei, N. Narasimha Murthy and K. D. Karlin 2335 Investigations of dioxygen reactivity with synthetic models of the metalloproteins hemocyanin and cytochrome *c* oxidase

J-C. Chambron, S. Chardon-Noblat, A. Harriman, V. Heitz and J-P. Sauvage 2343 Photoinduced electron transfer in multi-porphyrin clusters and rotaxanes

D. B. Amabilino and J. Fraser Stoddart 2351 Self-assembly and macromolecular design

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Commission on Microchemical Techniques and Trace Analysis (M. J. Pellin and J. W. Burnett) 2361 Depth of origin of sputtered atoms (Technical Report)

Commissions on Chromatography and Other Analytical Separations & Analytical Nomenclature (N. M. Rice, H. M. N. H. Irving and M. A. Leonard)	2373	Nomenclature for liquid–liquid distribution (solvent extraction) (IUPAC Recommendations 1993)
Commission on Chromatography and Other Analytical Separations (R. M. Smith)	2397	Nomenclature for supercritical fluid chromatography and extraction (IUPAC Recommendations 1993)
Commission on Chromatography and Other Analytical Separations (P. C. Uden)	2405	Nomenclature and terminology for analytical pyrolysis (IUPAC Recommendations 1993)

DECEMBER

Plenary and Invited lectures presented at the 3rd International Symposium on Analytical Chemistry in the Exploration, Mining and Processing of Materials held in Sandton, South Africa, 2–7 August 1992

L. R. P. Butler	v	Preface
N. G. Randolph	2411	Precious metals
S. Hetland and Y. Thomassen	2417	Sampling and chemical characterization of aerosols in workplace air
J. J. Gurney, H. Helmstaedt and R. O. Moore	2423	A review of the use and application of mantle mineral geochemistry in diamond exploration
K. A. Slickers	2443	Spectrochemical analysis in the metallurgical industry
D. H. Cornell	2453	Rare earths from supernova to superconductor
B. Welz and M. Sperling	2465	Flow injection: The ultimate approach to automation in analytical atomic spectroscopy
W. Riepe	2473	Coal and environment: Analytical aspects
H. Nickel	2481	Characterization of metallic and ceramic high-temperature materials for energy systems by means of atomic spectroscopy

Plenary lectures presented at the 23rd International Conference on Solution Chemistry held in Leicester, UK: 15–21 August 1993

M. H. Abraham	2503	Application of solvation equations to chemical and biochemical processes
H. J. C. Berendsen and S.-J. Marrink	2513	Molecular dynamics of water transport through membranes: Water from solvent to solute
J. L. Finney, A. K. Soper and J. Z. Turner	2521	Water perturbation close to non-polar groups in aqueous solutions
F. Franks	2527	Solid aqueous solutions
J. Grandjean and P. Laszlo	2539	Structuring at solid interfaces in binary solvent mixtures

E. Grunwald and C. Steel	2543	Environmental isomers and continuum models in liquids with emphasis on water and benzene
T. H. Lilley	2551	The interplay between solute solvation and solute-solute interactions in solutions containing amino acids, peptides and related species
T.-K. Lim	2561	The calculation of activity coefficients of binary mixed electrolytes
C. Minero and E. Pelizzetti	2573	The generalized pseudophase model: Treatment of multiple equilibria in micellar solutions
G. W. Neilson	2583	Interatomic structure of aqueous ionic solutions
H. Ohtaki	2589	A rapid direct analysis of the structure of reaction intermediates by the EXAFS method combined with a stopped-flow technique
C. Reichardt, S. Asharin-Fard, A. Blum, M. Eschner, A-M. Mehranpour, P. Milart, T. Neim, G. Schäfer and M. Wilk	2593	Solute/solvent interactions and their empirical determination by means of solvatochromic dyes
R. van Eldik	2603	Pressure as a kinetic parameter in mechanistic studies of chemical reactions induced by flash photolysis and pulse radiolysis

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Electrochemistry (V. M. M. Lobo)	2613	Mutual diffusion coefficients in aqueous electrolyte solutions (Technical Report)
Commission on Chemical Kinetics (J. Villermaux)	2641	Kinetics of composite reactions in closed and open flow systems (IUPAC Recommendations 1993)